## SEQUENCE LISTING

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<110> Nielsen, M.
      Gerwien, J.
      Pedersen, L.
      Leist, M.
      Sager, T.
      Brines, M.
      Cerami, A.
      Ghezzi, P.
      Fiordaliso, F.
      Fratelli, M.
      Gido, G.
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Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
                           40
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Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
    50
                       55
                                          60
Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg
                   70
                                      75
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Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu
Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser
                               105
Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Glu Gly
       115
                          120
Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu
                135
Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile
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Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 6 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 6 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Asp Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 125 115

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

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150

130

145

155

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> <211> 580 <212> DNA <213> Homo sapiens <400> 7 atgggggtgc acgaatgtcc tgcctggctg tggcttctcc tgtccctgct gtcgctccct 60 ctgggcctcc cagtcctggg cgccccacca cgcctcatct gtgacagccg agtcctggag 120 aggtacctct tggaggccaa ggaggccgag aatatcacga cgggctgtgc tgaacactgc 180 agcttgaatg agaatatcac tgtcccagac accaaagtta atttctatgc ctggaagagg 240 300 atggaggtcg ggcagcaggc cgtagaagtc tggcagggcc tggccctgct gtcggaagct gtcctgcggg gccaggccct gttggtcaac tcttcccagc cgtgggagcc cctgcactgc 360 atgtggataa agccgtcagt ggccttcgca gcctcaccac tctgcttcgg gctctgggag 420 cccagaagga agccatctcc cctccagatg cggcctcagc tgctccactc cgaacaatca 480 ctgctgacac tttcgcaaac tcttccgagt ctactccaat ttcctccggg gaaagctgaa 540 580 gctgtacaca ggggaggcct gcaggacagg ggacagatga <210> 35 <211> <212> DNA <213> Artificial <220> <223> Description of Artificial Sequence: primer <400> 8 35 agctctcgag gcgcggagat gggggtgcac gaatg <210> 9 36 <211> <212> DNA <213> Artificial <220> <223> Description of Artificial Sequence: primer

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Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu
130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

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<400> 16

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<210> 17 <211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

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Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Ile Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu
130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 18

<211> 193

<212> PRT

<213> Artificial

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<223> Description of Artificial Sequence: mutein

<400> 18

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Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Ser Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu
130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 19

<211> 193

<212> PRT

<213> Artificial

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Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185

Arg

<210> 20

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

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Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Ala Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 21

<211> 193

<212> PRT

<213> Artificial

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Met Gly V
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Leu Ser L

Ile Cys A

23> Description of Artificial Sequence: mutein

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Ala Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 . 185 190

Arg

<210> 22 <211> 193 <212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 22

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Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 23

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 23

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Glu Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 24

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 24

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Gln Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg
65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu
130 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 25 <211> 193 <220> <223> <400> 25

<212> PRT

<213> Artificial

Description of Artificial Sequence: mutein

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Ile Cys Asp Ser Arg Val Leu Glu Arg Ala Leu Leu Glu Ala Lys Glu

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 145 155

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185

Arg

<210> 26 <211> 193 <212> PRT <213> Artificial <220> Description of Artificial Sequence: mutein <223> <400> 26 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Phe Leu Leu Glu Ala Lys Glu 35 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 80 65 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 95 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp

Arg

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<220 <223		Desc	ript	ion d	on of Artificial Sequence: mutein											
<400	)>	27														
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Leu	Ser	Leu	Pro 20	Leu	Gly	Leu	Pro	Val 25	Leu	Gly	Ala	Pro	Pro 30	Arg	Leu	
Ile	Cys	Asp 35	Ser	Arg	Val	Leu	Glu 40	Arg	Ile	Leu	Leu	Glu 45	Ala	Glu	Glu	
Ala	Glu 50	Asn	Ile	Thr	Thr	Gly 55	Cys	Ala	Glu	His	Cys 60	Ser	Leu	Asn	Glu	
Asn 65	Ile	Thr	Val	Pro	Asp 70	Thr	Lys	Val	Asn	Phe 75	Tyr	Ala	Trp	Lys	Arg 80	
Met	Glu	Val	Gly	Gln 85	Gln	Ala	Val	Glu	Val 90	Trp	Gln	Gly	Leu	Ala 95	Leu	
Leu	Ser	Glu	Ala 100	Val	Leu	Arg	Gly	Gln 105	Ala	Leu	Leu	Val	Asn 110	Ser	Ser	
Gln	Pro	Trp 115	Glu	Pro	Leu	Gln	Leu 120	His	Val	Asp	Lys	Ala 125	Val	Ser	Gly	
Leu	Arg 130	Ser	Leu	Thr	Thr	Leu 135	Leu	Arg	Ala	Leu	Gly 140	Ala	Gln	Lys	Glu	
Ala 145	Ile	Ser	Pro	Pro	Asp 150	Ala	Ala	Ser	Ala	Ala 155	Pro	Leu	Arg	Thr	Ile 160	
Thr	Ala	Asp	Thr	Phe 165	Arg	Lys	Leu	Phe	Arg 170	Val	Tyr	Ser	Asn	Phe 175	Leu	
Arg	Gly	Lys	Leu 180	Lys	Leu	Tyr	Thr	Gly 185	Glu	Ala	Cys	Arg	Thr 190	Gly	Asp	

Arg

<210> 28 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Glu Glu 35 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 95 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 155

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu

165

Arg <210> 29 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 29 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 30 20 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Ala Glu 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 160 155 145 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

170

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 30

<211> 193

<212> PRT

<213> Artificial

<220s

<223> Description of Artificial Sequence: mutein

<400> 30

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Ala 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 Arq Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 31 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 31 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 30 20 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 35 Ala Glu Lys Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 135

155

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 32 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 32 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 Ala Glu Asn Ile Thr Thr Gly Ser Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135

155

160

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

150

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 33 <211> 193 <212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 33

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Tyr Ala Glu His Cys Ser Leu Asn Glu
50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 160 145 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 34 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 34 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 3.0 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Asn Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

135

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 35 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 35 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu Thr Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 110 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

140

135

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 36

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 36

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Ser Ser Leu Asn Glu
50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu
85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 160 145 150 155 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp Arg <210> 37 <211> 193 <212> PRT <213> Artificial <220> Description of Artificial Sequence: mutein <223> <400> 37 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 10 15 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Tyr Ser Leu Asn Glu 50 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 110 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly

120

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 38 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 38 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Lys Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser

105

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp Arg <210> 39 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 39 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Lys Ser Ser

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

135

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 40

<211> 193

<212> PRT <213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 40

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Asn Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 Arg <210> 41 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 41 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55

Asn Ile Thr Val Ala Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 42

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 42

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Ala Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg
65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 43 <211> 193 <212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 43

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Ile Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 44 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 44 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55

Asn Ile Thr Val Pro Asp Thr Asp Val Asn Phe Tyr Ala Trp Lys Arg

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 45 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 45 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu

55

70

Asn Ile Thr Val Pro Asp Thr Ala Val Asn Phe Tyr Ala Trp Lys Arg

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 115 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 46 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu

Asn Ile Thr Val Pro Asp Thr Lys Ala Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 165 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 190 180 Arg <210> 47 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 47 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu

Asn Ile Thr Val Pro Asp Thr Lys Val Ala Phe Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 190 180 185 Arg <210> 48 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 48 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Ile Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 165 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg <210> 49 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 49 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu

40

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Ala Tyr Ala Trp Lys Arg 75 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 145 155 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 50 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 50 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu

55

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu

40

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Ala Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 140 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 175 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 190 Arq <210> 51 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 51 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu

10

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Ser Ala Trp Lys Arg 80 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 52 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5

30

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 25

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Phe Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 155 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 53 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 53 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 10

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

25

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Asn Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg

<210> 54 <211> 193 <212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 54

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Ala Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg <210> 55 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 55 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Asn Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

## Arg

<210> 56 <211> 193 <212> PRT <213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 56

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arq 70 Met Glu Val Gly Gln Gln Ala Val Thr Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 110 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 57 <211> 193 <212> PRT <213> Artificial

<223> Description of Artificial Sequence: mutein

<220>

<400> 57

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Ser Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg

<210> 58

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 58

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Ala Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 59

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 59

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Arg Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 60

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 60

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu
85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Ala Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 61

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 61

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Arg Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 62

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 62

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
50 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Glu Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu
130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 63 <211> 193 <212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 63

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ala Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

<210> 64

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 64

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
50 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu
85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Thr Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp

<210> 65 <211> 193

<212> PRT

<213> Artificial

<220>

Description of Artificial Sequence: mutein <223>

<400> 65

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 25

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Ala 120

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185

<210> 66

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 66

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu
85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Ile 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

<211> 193 <212> PRT <213> Artificial <220> Description of Artificial Sequence: mutein <223> <400> 67 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Ala Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170

<210> 67

190

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp

185

Arg

<210> 68

<211><212><213>		193 PRT Artificial													
<220 <223	0 >	Desc:			of A	rtif:	icia	l Sed	guen	ce: 1	mute:	in			
<400		68	-						•						
		Val	His	Glu 5	Cys	Pro	Ala	Trp	Leu 10	Trp	Leu	Leu	Leu	Ser 15	Let
Leu	Ser	Leu	Pro 20	Leu	Gly	Leu	Pro	Val 25	Leu	Gly	Ala	Pro	Pro 30	Arg	Leu
Ile	Cys	Asp 35	Ser	Arg	Val	Leu	Glu 40	Arg	Tyr	Leu	Leu	Glu 45	Ala	Lys	Glu
Ala	Glu 50	Asn	Ile	Thr	Thr	Gly 55	Cys	Ala	Glu	His	Cys 60	Ser	Leu	Asn	Glu
Asn 65	Ile	Thr	Val	Pro	Asp 70	Thr	Lys	Val	Asn	Phe 75	Tyr	Ala	Trp	Lys	Arg 80
Met	Glu	Val	Gly	Gln 85	Gln	Ala	Val	Glu	Val 90	Trp	Gln	Gly	Leu	Ala 95	Leu
Leu	Ser	Glu	Ala 100	Val	Leu	Arg	Gly	Gln 105	Ala	Leu	Leu	Val	Asn 110	Ser	Ser
Gln	Pro	Trp 115	Glu	Pro	Leu	Gln	Leu 120	His	Val	Asp	Lys	Ala 125	Val	Ser	Gly
Leu	Ala 130	Ser	Leu	Thr	Thr	Leu 135	Leu	Arg	Ala	Leu	Gly 140	Ala	Gln	Lys	Glu
Ala 145	Ile	Ser	Pro	Pro	Asp 150	Ala	Ala	Ser	Ala	Ala 155	Pro	Leu	Arg	Thr	Ile 160
Thr	Ala	Asp	Thr	Phe 165	Arg	Lys	Leu	Phe	Arg 170	Val	Tyr	Ser	Asn	Phe 175	Leu
Arg	Gly	Lys	Leu 180	Lys	Leu	Tyr	Thr	Gly 185	Glu	Ala	Cys	Arg	Thr 190	Gly	Asp

<210> 69 <211> 193 <212> PRT <213> Artificial <220> Description of Artificial Sequence: mutein <223> <400> 69 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Glu Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp

185

Arg

<210> 70

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 70

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ala Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp

180 185 190

Arg

<210> 71

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 71

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55.

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ile Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp Arg <210> 72 <211> 193 <212> PRT <213> Artificial <220> Description of Artificial Sequence: mutein <400> 72 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Ala Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145

170

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 73 <211> 193 <212> PRT <213> Artificial <220> Description of Artificial Sequence: mutein <223> <400> 73 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Ala Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

<223> Description of Artificial Sequence: mutein

<220>

<400> 74

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Ile Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 75

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 75

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Ala Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu
130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 76 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 10 15 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 3.0 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Leu Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 77 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 77 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115

Leu Arg Ser Leu Thr Thr Lys Leu Arg Ala Leu Gly Ala Gln Lys Glu

135

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 78 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 30 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly

120

Leu Arg Ser Leu Thr Thr Ala Leu Arg Ala Leu Gly Ala Gln Lys Glu 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 79 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly

120

Leu Arg Ser Leu Thr Thr Ser Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 80

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 80

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Ala Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arq <210> 81 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 81 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

70

65

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 135 Ala Ile Ser Pro Pro Asp Ala Ala Ala Ala Pro Leu Arg Thr Ile 150 155 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 190 Arg <210> 82 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 82 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu

70

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Ala Ile 145 150 155 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp Arg <210> 83 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arq

70

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ala 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 84

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 84

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Ala Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 85

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 85

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 145 Thr Ala Asp Thr Phe Arg Ala Leu Phe Arg Val Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 86 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 86 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55

75

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 155 Thr Ala Asp Thr Phe Arg Lys Leu Ile Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg <210> 87 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 87 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 155 Thr Ala Asp Thr Phe Arg Lys Leu Phe Ala Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 88 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 88 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ala Asn Phe Leu 165 170 175 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg <210> 89 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 89 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Lys Phe Leu 165 170 175 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg <210> 90 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 90 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu

40

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Ala Phe Leu 165 170 175 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 190 Arg <210> 91 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 91 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 75 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Tyr Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 190 Arg <210> 92 <211> 193 <212> PRT <213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 92

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 35 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Ala Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg <210> 93 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 93 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

25

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 50 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Ala 165 170 175 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg

<210> 94 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 94

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

20 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Ala Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190 Arg <210> 95 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 95 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Glu Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 96 <211> 193 <212> PRT <213> Artificial

<223> Description of Artificial Sequence: mutein

<220>

<400> 96

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu
130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Ala Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 97

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 97

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Ala Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 98

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 98

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Trp Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 99

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 99

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Ala Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 100

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 100

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
50 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Ala Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

Arg

<210> 101 <211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 101

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Ala Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 102

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Ala Glu Ala Cys Arg Thr Gly Asp 180 185 190

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 103

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
50 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Ser Arg Thr Gly Asp 180 185 190

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 104

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu
85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Ala Arg Thr Gly Asp 180 185 190

<210> 105 <211> 193 <212> PRT <220> <223> <400> 105

<213> Artificial

Description of Artificial Sequence: mutein

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Ala Thr Gly Asp 180 185

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<22 <22		Desc	ript	ion	of A	rtif	icia	l Se	quen	ce:	mute	in			
<40	0>	106													
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Leu	Ser	Leu	Pro 20	Leu	Gly	Leu	Pro	Val 25	Leu	Gly	Ala	Pro	Pro 30	Arg	Leu
Ile	Cys	Asp 35	Ser	Arg	Val	Leu	Glu 40	Arg	Tyr	Leu	Leu	Glu 45	Ala	Lys	Glu
Ala	Glu 50	Asn	Ile	Thr	Thr	Gly 55	Cys	Glu	His	Cys	Ser 60	Leu	Asn	Glu	Asn
Ile 65	Thr	Val	Pro	Asp	Thr 70	Asp	Val	Asn	Phe	Tyr 75	Ala	Trp	Lys	Arg	Met 80
Glu	Val	Gly	Gln	Gln 85	Ala	Val	Glu	Val	Trp 90	Gln	Gly	Leu	Ala	Leu 95	Leu
Ser	Glu	Ala	Val 100	Leu	Arg	Gly	Gln	Ala 105	Leu	Leu	Val	Asn	Ser 110	Ser	Gln
Pro	Trp	Glu 115	Pro	Leu	Gln	Leu	His 120	Val	Asp	Lys	Ala	Val 125	Glu	Gly	Leu
Arg	Ser 130	Leu	Thr	Thr	Leu	Leu 135	Arg	Ala	Leu	Gly	Ala 140	Gln	Lys	Glu	Ala
Ile 145	Ser	Pro	Pro	Asp	Ala 150	Ala	Ser	Ala	Ala	Pro 155	Leu	Arg	Thr	Ile	Thr 160
Ala	Asp	Thr	Phe	Arg 165	Lys	Leu	Phe	Arg	Val 170	Tyr	Ser	Asn	Phe	Leu 175	Arg
Gly	Lys	Leu	Lys 180	Leu	Tyr	Thr	Gly	Glu 185	Ala	Cys	Arg	Thr	Gly 190	Asp	Arg

<211> 193

<212> PRT

<213> Artificial

<220>

<223> Description of Artificial Sequence: mutein

<400> 107

Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Asn Glu Thr Cys Ser Leu Asn Glu 50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 190

<211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 108 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Asp Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Glu Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp

<210> 108

180

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Leu	Ser	Leu	Pro 20	Leu	Gly	Leu	Pro	Val 25	Leu	Gly	Ala	Pro	Pro 30	Arg	Leu
Ile	Cys	Asp 35	Ser	Arg	Val	Leu	Glu 40	Arg	Tyr	Leu	Leu	Glu 45	Ala	Lys	Glu
Ala	Glu 50	Asn	Ile	Thr	Thr	Gly 55	Cys	Ala	Glu	His	Cys 60	Ser	Leu	Asn	Glu
Asn 65	Ile	Thr	Val	Pro	Asp 70	Thr	Lys	Val	Asn	Phe 75	Tyr	Ala	Trp	Lys	Arg 80
Met	Glu	Val	Gly	Gln 85	Gln	Ala	Val	Glu	Val 90	Trp	Gln	Gly	Leu	Ala 95	Leu
Leu	Ser	Glu	Ala 100	Val	Leu	Arg	Gly	Gln 105	Ala	Leu	Leu	Val	Asn 110	Ser	Ser
Gln	Pro	Trp 115	Glu	Pro	Leu	Gln	Leu 120	His	Val	Asp	Lys	Ala 125	Val	Ser	Gly
Leu	Glu 130	Ser	Leu	Thr	Thr	Ser 135	Leu	Arg	Ala	Leu	Gly 140	Ala	Gln	Lys	Glu
Ala 145	Ile	Ser	Pro	Pro	Asp 150	Ala	Ala	Ser	Ala	Ala 155	Pro	Leu	Arg	Thr	Ile 160
Thr	Ala	Asp	Thr	Phe 165	Arg	Lys	Leu	Phe	Arg 170	Val	Tyr	Ser	Asn	Phe 175	Leu
Arg	Gly	Lys	Leu 180	Lys	Leu	Tyr	Thr	Gly 185	Glu	Ala	Cys	Arg	Thr 190	Gly	Asp

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Leu	Ser	Leu	Pro 20	Leu	Gly	Leu	Pro	Val 25	Leu	Gly	Ala	Pro	Pro 30	Arg	Leu
Ile	Cys	Asp 35	Ser	Arg	Val	Leu	Glu 40	Arg	Tyr	Leu	Leu	Glu 45	Ala	Lys	Glu
Ala	Glu 50	Asn	Ile	Thr	Thr	Gly 55	Сув	Ala	Glu	His	Cys 60	Ser	Leu	Asn	Glu
Asn 65	Ile	Thr	Val	Pro	Asp 70	Thr	Lys	Val	Asn	Phe 75	Tyr	Ala	Trp	Ala	Arg 80
Met	Glu	Val	Gly	Gln 85	Gln	Ala	Val	Glu	Val 90	Trp	Gln	Gly	Leu	Ala 95	Leu
Leu	Ser	Glu	Ala 100	Val	Leu	Arg	Gly	Gln 105	Ala	Leu	Leu	Val	Asn 110	Ser	Ser
Gln	Pro	Trp 115	Glu	Pro	Leu	Gln	Leu 120	His	Val	Asp	Lys	Ala 125	Val	Ser	Gly
Leu	Arg 130	Ser	Leu	Thr	Thr	Leu 135	Leu	Arg	Ala	Leu	Gly 140	Ala	Gln	Lys	Glu
Ala 145	Ile	Ser	Pro	Pro	Asp 150	Ala	Ala	Ser	Ala	Ala 155	Pro	Leu	Arg	Thr	Ile 160
Thr	Ala	Asp	Thr	Phe 165	Arg	Ala	Leu	Phe	Arg 170	Val	Tyr	Ser	Asn	Phe 175	Leu
Arg	Gly	Lys	Leu 180	Lys	Leu	Tyr	Thr	Gly 185	Glu	Ala	Cys	Arg	Thr 190	Gly	Asp

Arg

<210> 111 <211> 193 <212> PRT <213> Artificial <220> Description of Artificial Sequence: mutein <223> <400> 111 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Ala Val Asn Phe Tyr Ala Trp Ala Arg 65 70 75 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155

170

Thr Ala Asp Thr Phe Arg Ala Leu Phe Arg Val Tyr Ser Asn Phe Leu

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 112 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 112 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 60 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 110 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

145

150

170

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu

Arg <210> 113 <211> 193 <212> PRT <213> Artificial <220> Description of Artificial Sequence: mutein <223> <400> 113 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Ala Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp

Arg Gly Ala Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 114 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 114 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 15 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Ala Val Asn Phe Tyr Ala Trp Lys Arq 65 70 75 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Ala Ala Val Ser Gly 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

130

145

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Ala Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 115 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 115 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 3.0 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Ala Val Asn Phe Tyr Ala Trp Ala Arg 65 70 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Ala Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 140

155

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

150

Thr Ala Asp Thr Phe Arg Ala Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Ala Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 116 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 116 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 3.0 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Ala Val Asn Phe Tyr Ala Trp Ala Arg 65 70 75 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 90 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Ala Ala Val Ser Gly 115

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

145 150 Thr Ala Asp Thr Phe Arg Ala Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Ala Leu Ala Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 117 <211> 193 <212> PRT <213> Artificial <220> <223> Description of Artificial Sequence: mutein <400> 117 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 3.0 Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Lys Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Lys Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 80 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Lys Ser Ser 100 105 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 120 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

140

135

145 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 118 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 118 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 2.0 25 Ile Cys Asp Ser Arg Val Leu Glu Arg Ala Leu Leu Glu Ala Lys Glu 40 Ala Glu Lys Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 105 100 Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly 115 Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

135

145 150 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 185 Arg <210> 119 <211> 193 <212> PRT <213> Artificial <223> Description of Artificial Sequence: mutein <400> 119 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 5 10 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu 20 25 30 Ile Cys Asp Ser Arg Val Leu Glu Ala Ala Leu Leu Glu Ala Lys Glu 35 40 Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu 50 55 60 Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg 65 70 75 Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu 85 Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser 100 105

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly

120

115

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Gly Ala Gln Lys Glu 130 135 Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile 145 150 155 160 Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu 165 170 Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp 180 185 Arg <210> 120 <211> 36 <212> DNA <213> Artificial <220> <223> Description of Artificial Sequence: primer <400> 120 gtctactcca atttcctcga gggaaagctg aagctg 36 <210> 121 <211> 34 <212> DNA <213> Artificial <220> <223> Description of Artificial Sequence: primer <400> 121 gcttcagctt tccctcgagg aaattggagt agac 34 <210> 122 <211> 32 <212> DNA <213> Artificial <220> <223> Description of Artificial Sequence: primer ccgtcagtgg ccttgagagc ctcaccactc tg 32 <210> 123 <211> 32 <212> DNA

<213> Artificial

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<220>
<223> Description of Artificial Sequence: primer
<400> 123
cagagtggtg aggctctcaa ggccactgac gg
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<210> 124
<211> 32
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 124
ccgtcagtgg ccttgagagc ctcaccactc tg
                                                                     32
<210> 125
<211> 32
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 125
cagagtggtg aggctctcaa ggccactgac gg
                                                                     32
<210> 126
<211> 31
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 126
cgcagcctca ccacttcgct tcgggctctg g
                                                                     31
<210> 127
<211> 31
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 127
ccagagcccg aagcgaagtg gtgaggctgc g
                                                                     31
<210> 128
<211> 40
<212> DNA
<213> Artificial
<220>
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<223> Description of Artificial Sequence: primer
 <400> 128
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 gaatatcact gtcccagacg gtggtgcctg gaagaggatg
 <210> 129
 <211> 40
 <212> DNA
 <213> Artificial
 <220>
 <223> Description of Artificial Sequence: primer
 <400> 129
 catcctcttc caggcaccac cgtctgggac agtgatattc
                                                                       40
 <210> 130
 <211> 33
 <212> DNA
 <213> Artificial
 <220>
 <223> Description of Artificial Sequence: primer
. <400> 130
                                                                       33
 tacctcttgg aggccgcgga ggccgagaat atc
 <210> 131
 <211> 33
 <212> DNA
 <213> Artificial
 <220>
 <223> Description of Artificial Sequence: primer
 <400> 131
 gatattctcg gcctccgcgg cctccaagag gta
                                                                       33
 <210> 132
 <211> 35
 <212> DNA
 <213> Artificial
 <220>
 <223> Description of Artificial Sequence: primer
 gctgacactt tccgcgcact cttccgagtc tactc
                                                                       35
 <210> 133
 <211> 35
 <212> DNA
 <213>
       Artificial
 <220>
 <223> Description of Artificial Sequence: primer
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<400> 133
gagtagactc ggaagagtgc gcggaaagtg tcagc
                                                                     35
<210> 134
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 134
atttcctccg gggagcgctg aagctgtaca cag
                                                                     33
<210> 135
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 135
ctgtgtacag cttcagcgct ccccggagga aat
                                                                     33
<210> 136
<211> 32
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 136
ctccggggaa agctggcgct gtacacaggg ga
                                                                     32
<210> 137
<211> 32
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 137
tcccctgtgt acagcgccag ctttccccgg ag
                                                                     32
<210> 138
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
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<400> 138
actgtcccag acaccgcagt taatttctat gcctg
                                                                      35
<210> 139
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 139
caggcataga aattaactgc ggtgtctggg acagt
                                                                      35
<210> 140
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 140
agttaatttc tatgcctggg cgaggatgga ggtcg
                                                                      35
<210> 141
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 141
cgacctccat cctcgcccag gcatagaaat taact
                                                                     35
<210> 142
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 142
tgcagctgca tgtggatgca gccgtcagtg gcc
                                                                     33
<210> 143
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
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<400> 143
ggccactgac ggctgcatcc acatgcagct gca
                                                                       33
<210> 144
<211> 32
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 144
ctctgggagc ccaggcggaa gccatctccc ct
                                                                      32
<210> 145
<211> 32
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 145
aggggagatg gcttccgcct gggctcccag ag
                                                                      32
<210> 146
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 146
gctgacactt tccgcgcact cttccgagtc tactc
                                                                      35
<210> 147
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 147
gagtagactc ggaagagtgc gcggaaagtg tcagc
                                                                      35
<210> 148
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 148
agttaatttc tatgcctggg cgaggatgga ggtcg
                                                                     35
<210> 149
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 149
cgacctccat cctcgcccag gcatagaaat taact
                                                                     35
<210> 150
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 150
gctgacactt tccgcgcact cttccgagtc tactc
                                                                     35
<210> 151
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 151
                                                                     35
gagtagactc ggaagagtgc gcggaaagtg tcagc
<210> 152
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 152
agttaatttc tatgcctggg cgaggatgga ggtcg
                                                                     35
<210> 153
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
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```
<400> 153
cgacctccat cctcgcccag gcatagaaat taact
                                                                      35
<210> 154
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 154
actgtcccag acaccgcagt taatttctat gcctg
                                                                      35
<210> 155
<211> 35
<212> DNA
<213> Artificial
<220>
<223>
      Description of Artificial Sequence: primer
<400> 155
caggcataga aattaactgc ggtgtctggg acagt
                                                                      35
<210> 156
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 156
tgcagctgca tgtggatgca gccgtcagtg gcc
                                                                      33
<210> 157
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
ggccactgac ggctgcatcc acatgcagct gca
                                                                     33
<210> 158
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 158
atttcctccg gggagcgctg aagctgtaca cag
                                                                      33
<210> 159
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 159
ctgtgtacag cttcagcgct ccccggagga aat
                                                                     33
<210> 160
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 160
tgcagctgca tgtggatgca gccgtcagtg gcc
                                                                     33
<210> 161
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 161
ggccactgac ggctgcatcc acatgcagct gca
                                                                     33
<210> 162
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 162
atttcctccg gggagcgctg aagctgtaca cag
                                                                     33
<210> 163
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 163
ctgtgtacag cttcagcgct ccccggagga aat
                                                                     33
<210> 164
<211> 35
<212> DNA
<213> Artificial
<220>
      Description of Artificial Sequence: primer
<223>
<400> 164
actgtcccag acaccgcagt taatttctat gcctg
                                                                     35
<210> 165
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 165
caggcataga aattaactgc ggtgtctggg acagt
                                                                     35
<210> 166
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 166
tgcagctgca tgtggatgca gccgtcagtg gcc
                                                                     33
<210> 167
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 167
ggccactgac ggctgcatcc acatgcagct gca
                                                                     33
<210> 168
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 168
atttcctccg gggagcgctg aagctgtaca cag
                                                                     33
<210> 169
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 169
ctgtgtacag cttcagcgct ccccggagga aat
                                                                     33
<210> 170
<211> 35
<212> DNA
<213> Artificial
<223> Description of Artificial Sequence: primer
<400> 170
actgtcccag acaccgcagt taatttctat gcctg
                                                                     35
<210> 171
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 171
caggcataga aattaactgc ggtgtctggg acagt
                                                                     35
<210> 172
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
agttaatttc tatgcctggg cgaggatgga ggtcg
                                                                     35
<210> 173
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 173
cgacctccat cctcgcccag gcatagaaat taact
                                                                     35
<210> 174
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 174
tgcagctgca tgtggatgca gccgtcagtg gcc
                                                                     33
<210> 175
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 175
ggccactgac ggctgcatcc acatgcagct gca
                                                                     33
<210> 176
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 176
atttcctccg gggagcgctg aagctgtaca cag
                                                                     33
<210> 177
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 177
                                                                     33
ctgtgtacag cttcagcgct ccccggagga aat
<210> 178
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 178
actgtcccag acaccgcagt taatttctat gcctg
                                                                      35
<210> 179
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 179
caggcataga aattaactgc ggtgtctggg acagt
                                                                      35
<210> 180
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 180
agttaatttc tatgcctggg cgaggatgga ggtcg
                                                                      35
<210> 181
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 181
cgacctccat cctcgcccag gcatagaaat taact
                                                                      35
<210> 182
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 182
gctgacactt tccgcgcact cttccgagtc tactc
                                                                     35
<210> 183
<211>
      35
<212>
      DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 183
gagtagactc ggaagagtgc gcggaaagtg tcagc
                                                                      35
<210> 184
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 184
tgcagctgca tgtggatgca gccgtcagtg gcc
                                                                      33
<210> 185
<211> 33
<212> DNA
<213> Artificial
<220>
<223>
     Description of Artificial Sequence: primer
<400> 185
ggccactgac ggctgcatcc acatgcagct gca
                                                                     33
<210> 186
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 186
                                                                     33
atttcctccg gggagcgctg aagctgtaca cag
<210> 187
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 187
ctgtgtacag cttcagcgct ccccggagga aat
                                                                     33
<210> 188
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 188
actgtcccag acaccgcagt taatttctat gcctg
                                                                      35
<210> 189
<211> 35
<212> DNA
<213> Artificial
<220>
<223>
      Description of Artificial Sequence: primer
<400> 189
caggcataga aattaactgc ggtgtctggg acagt
                                                                      35
<210> 190
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 190
agttaatttc tatgcctggg cgaggatgga ggtcg
                                                                      35
<210> 191
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
cgacctccat cctcgcccag gcatagaaat taact
                                                                     35
<210> 192
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 192
gctgacactt tccgcgcact cttccgagtc tactc
                                                                     35
<210> 193
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 193
gagtagactc ggaagagtgc gcggaaagtg tcagc
                                                                     35
<210> 194
<211> 32
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 194
ctccggggag cgctggcgct gtacacaggg ga
                                                                     32
<210> 195
<211> 32
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 195
tcccctgtgt acagcgccag cgctccccgg ag
                                                                     32
<210> 196
<211> 31
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 196
caaggaggcc gagaaaatca cgacgggctg t
                                                                     31
<210> 197
<211> 31
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 197
acagecegte gtgattttet eggeeteett g
                                                                     31
<210> 198
<211>
      37
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 198
                                                                      37 -
actgcagctt gaatgagaaa atcactgtcc cagacac
<210> 199
<211> 37
<212> DNA
<213> Artificial
<220>
      Description of Artificial Sequence: primer
<223>
<400> 199
gtgtctggga cagtgatttt ctcattcaag ctgcagt
                                                                      37
<210> 200
<211> 31
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 200
aggccctgtt ggtcaaatct tcccagccgt g
                                                                      31
<210> 201
<211> 31
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 201
cacggctggg aagatttgac caacagggcc t
                                                                      31
<210> 202
<211> 33
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 202
atttcctccg gggatggctg aagctgtaca cag
                                                                      33
<210> 203
<211> 33
<212> DNA
<213>
      Artificial
<220>
<223> Description of Artificial Sequence: primer
```

```
<400> 203
ctgtgtacag cttcagccat ccccggagga aat
                                                                      33
<210> 204
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 204
agccgagtcc tggaggcggc cctcttggag gccaa
                                                                      35
<210> 205
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
<400> 205
ttggcctcca agagggccgc ctccaggact cggct
                                                                      35
<210> 206
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
agccgagtcc tggagaggc cctcttggag gccaa
                                                                      35
<210> 207
<211> 35
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: primer
ttggcctcca agagggccct ctccaggact cggct
                                                                      35
<210> 208
<211> 6059
<212> DNA
<213> Artificial
<220>
<223> Description of Artificial Sequence: plasmid
```

<400> ctagagtcga cccgggcggc cgcttccctt tagtgagggt taatgcttcg agcagacatg 60 120 ataagataca ttgatgagtt tggacaaacc acaactagaa tgcagtgaaa aaaatgcttt atttgtgaaa tttgtgatgc tattgcttta tttgtaacca ttataagctg caataaacaa 180 240 gttaacaaca acaattgcat tcattttatg tttcaggttc agggggagat gtgggaggtt ttttaaagca agtaaaacct ctacaaatgt ggtaaaatcc gataaggatc gatccgggct 300 ggcgtaatag cgaagaggcc cgcaccgatc gcccttccca acagttgcgc agcctgaatg 360 gcgaatggac gcgccctgta gcggcgcatt aagcgcggcg ggtgtggtgg ttacgcgcag 420 cgtgaccgct acacttgcca gcgccctagc gcccgctcct ttcgctttct tcccttcctt 480 tetegecaeg ttegeegget tteecegtea agetetaaat egggggetee etttagggtt 540 ccgatttagt gctttacggc acctcgaccc caaaaaactt gattagggtg atggttcacg 600 tagtgggcca tcgccctgat agacggtttt tcgccctttg acgttggagt ccacgttctt 660 720 taatagtgga ctcttgttcc aaactggaac aacactcaac cctatctcgg tctattcttt 780 tgatttataa gggattttgc cgatttcggc ctattggtta aaaaatgagc tgatttaaca aaaatttaac gcgaatttta acaaaatatt aacgcttaca atttcctgat gcggtatttt 840 900 ctccttacgc atctgtgcgg tatttcacac cgcatacgcg gatctgcgca gcaccatggc ctgaaataac ctctgaaaga ggaacttggt taggtacctt ctgaggcgga aagaaccagc 960 tgtggaatgt gtgtcagtta gggtgtggaa agtccccagg ctccccagca ggcagaagta 1020 1080 tgcaaagcat gcatctcaat tagtcagcaa ccaggtgtgg aaagtcccca ggctccccag caggcagaag tatgcaaagc atgcatctca attagtcagc aaccatagtc ccgccctaa 1140 ctccgcccat cccgcccta actccgccca gttccgccca ttctccgccc catggctgac 1200 taattttttt tatttatgca gaggccgagg ccgcctcggc ctctgagcta ttccagaagt 1260 agtgaggagg cttttttgga ggcctaggct tttgcaaaaa gcttgattct tctgacacaa 1320 cagtetegaa ettaaggeta gageeaceat gattgaacaa gatggattge acgeaggtte 1380 tccggccgct tgggtggaga ggctattcgg ctatgactgg gcacaacaga caatcggctg 1440 ctctgatgcc gccgtgttcc ggctgtcagc gcaggggcgc ccggttcttt ttgtcaagac 1500 cgacctgtcc ggtgccctga atgaactgca ggacgaggca gcgcggctat cgtggctggc 1560 cacgacgggc gttccttgcg cagctgtgct cgacgttgtc actgaagcgg gaagggactg 1620 gctgctattg ggcgaagtgc cggggcagga tctcctgtca tctcaccttg ctcctgccga 1680 gaaagtatcc atcatggctg atgcaatgcg gcggctgcat acgcttgatc cggctacctg 1740 1800 cccattcgac caccaagcga aacatcgcat cgagcgagca cgtactcgga tggaagccgg

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<212> DNA

<213> Artificial

<220>

<223> Description of Artificial Sequence: plasmid

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<sup>&</sup>lt;212> DNA

<sup>&</sup>lt;213> Artificial

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<sup>&</sup>lt;223> Description of Artificial Sequence: plasmid

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